

CLAIMS

What is claimed is:

- 5 1. An automated method for controlling a solids inventory in a continuous backwashing upflow sand filter system treating a liquid inflow having impurities therein, the method comprising the steps of: monitoring an inflow head pressure at an influent inlet; converting said head pressure to an equivalent communication signal input to a computer; and controlling an air inflow rate in the air lift pump to maintain a target ratio
10 range between a size of a captured solids inventory of the system and a size of a sand bed of the system.
2. The method of claim 1 further comprising the step of establishing a set of optimal operation initial set points based on a quantity of polymer used, a normal air lift rate, and an expected inflow and outflow turbidity.
- 15 3. The method of claim 2 further comprising the step of adjusting the air flow rate to maintain a selected effluent quality over a range of influent flow rates for a selected inflow quality.
4. The method of claim 3 further comprising the step of controlling head pressure and influent flow rate in light of past operating data for optimal performance.
- 20 5. An automated continuous backwashing upflow sand filter system apparatus for treating a liquid inflow having impurities therein so as to control a solids inventory, the improvement comprising: an influent inlet pressure monitor positioned and adapted for providing a monitor signal to a computer for generating a control signal; and adjusting an air inflow rate and in an air lift pump to maintain a target ratio range between a size of a
25 solids inventory of the system and a sand bed of the system.